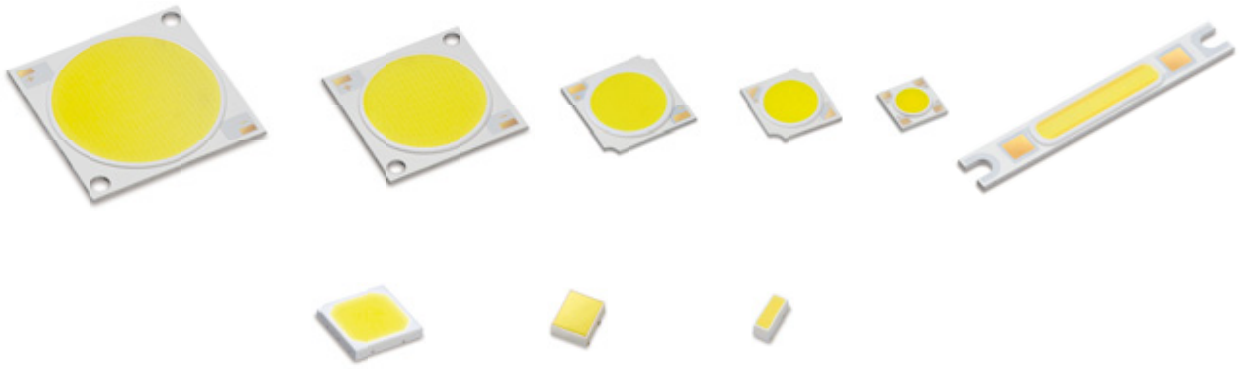
CITIZEN
Micro HumanTech

Short Form Lighting LED Catalog 2013
Products for General Lighting

COB High-wattage Series & Low-wattage Series

2013 New Specifications



CITILED®
The Light Engine

Concept of Our LED

Superiority with Reliability

- Optimized die positioning
- Color control : 3-step MacAdam Ellipse
- Long life

Various Product Line-ups

- Suitable products for your application

High Efficacy and High Power

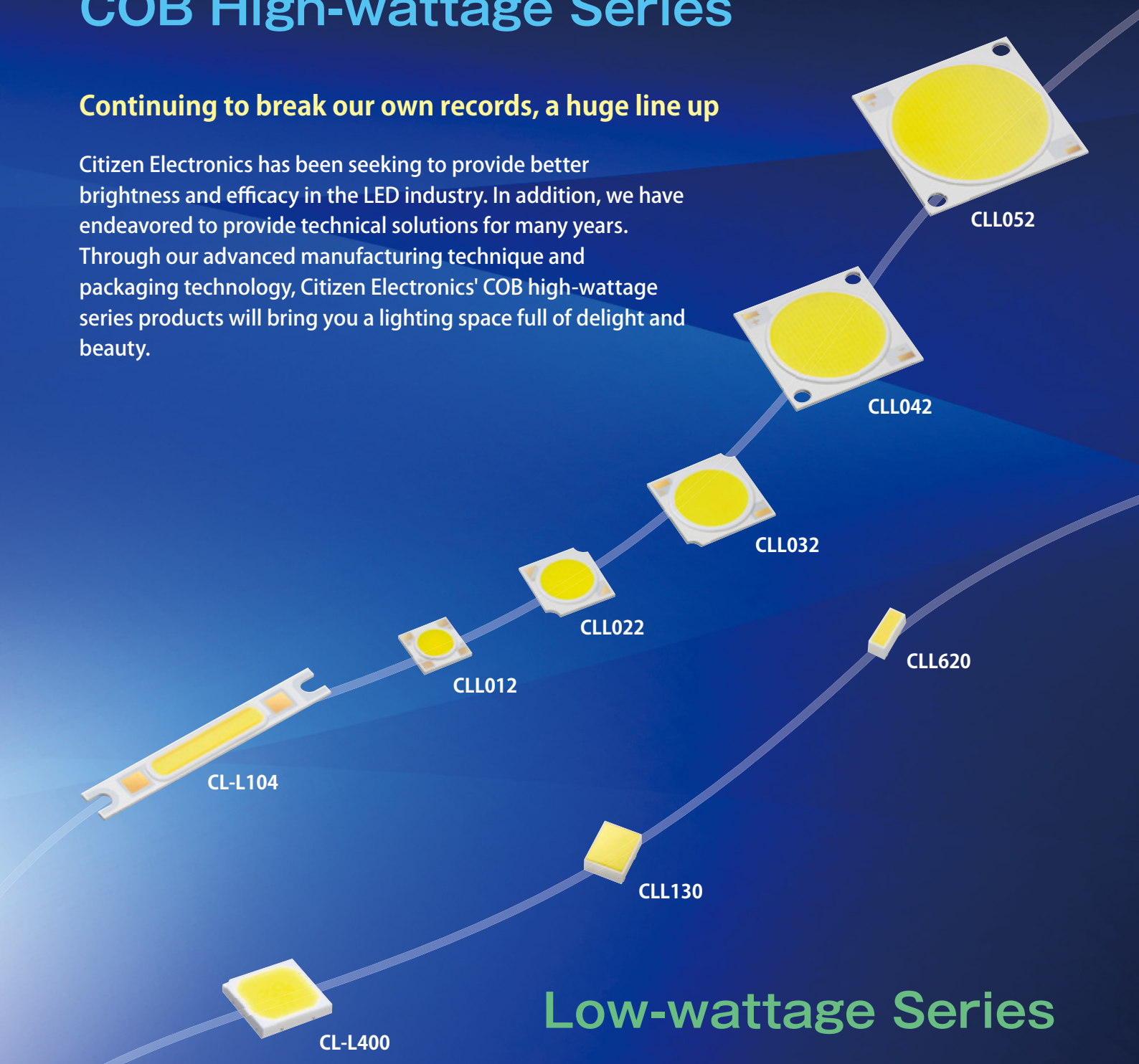
- Providing a wide selection for brightness and efficacy

Citizen Electronics is the "1st COB Manufacturer."
We continue to lead the LED industry as an inventor of high-wattage LED packages and aspire to be your best business partner.
We never stop challenging ourselves to improve our technology.
Our passion is to never give up until we meet your expectation.
Our proposals never sacrifice the optimum result.
Everything we make is to stretch your imagination.

COB High-wattage Series

Continuing to break our own records, a huge line up

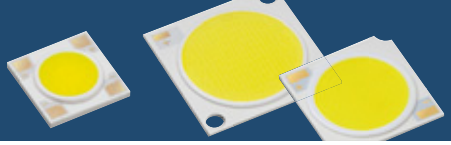
Citizen Electronics has been seeking to provide better brightness and efficacy in the LED industry. In addition, we have endeavored to provide technical solutions for many years. Through our advanced manufacturing technique and packaging technology, Citizen Electronics' COB high-wattage series products will bring you a lighting space full of delight and beauty.



Low-wattage Series

Continuing to seek light grace, 3-step MacAdam Ellipse

Linear, rectangular, spiral; our smallest LED components enable us to create and design new LED lighting as you desire. Our surface mounted low-wattage LEDs aim at providing LED lighting that is more exciting, cater better to our lifestyles, and inspire luminaire designers with fantastic ideas.

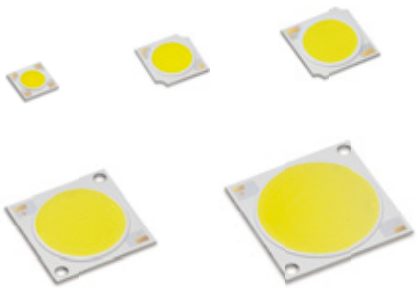


CLL012/ CLL022/ CLL032/ CLL042/ CLL052

Bulb | Spot light | Down light | High bay | Street light

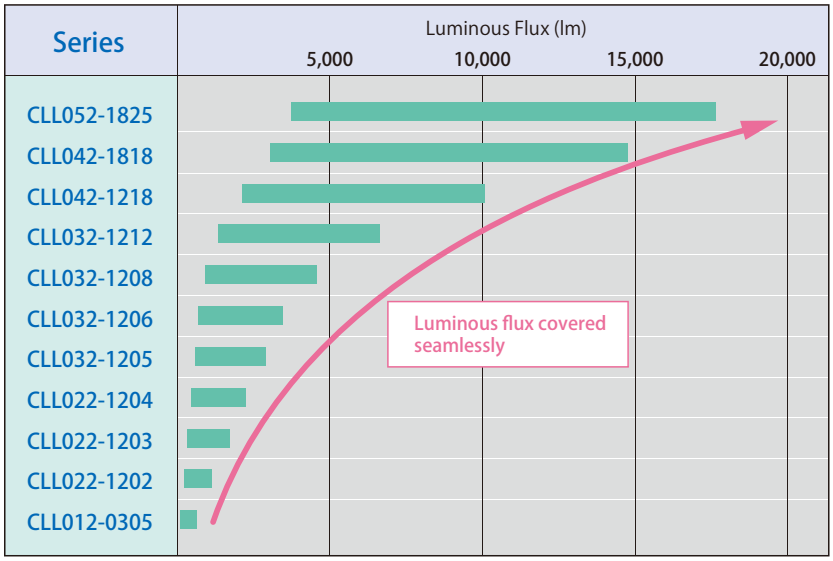
Possibility of wide selection of brightness and efficacy

The new COB Series covers a range of luminous flux with only 5 components, from one produced by a 10W incandescent bulb to one produced by a 300W mercury lamp, both of which are conventional light sources. The adopted element arrangement is capable of utilizing light more effectively. It is also possible to set efficacy at up to 155lm/W LED driving conditions due to the product covering a wide range of luminous flux and efficacy.



■ Variations in Luminous Flux

(5,000K, Ra 65 Typ.)



■ Optimized die positioning

Our original chip alignment which creates excellent luminance uniformity.

CL-L104

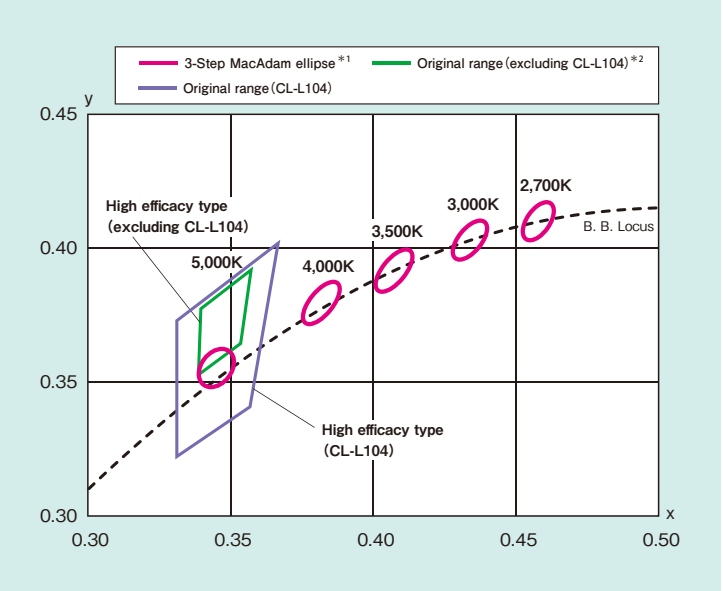
Street light | Accent light | Base light | Panel light

The newest model of the CLL100 series, which was the first COB LED in the market, will be launched in 2013

Slim-type linear light-emitting package for use with a wide variety of light source modules.

Chromaticity range with minimal color variabilty

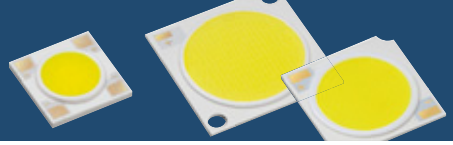
Ra Min.80 and 90 type is compliant with 3-step MacAdam Ellipse. Due to the success in color control in the LED manufacturing process, we have built up a good reputation for our customers by providing their lighting appliances with little color variability. High efficacy type is compliant with original range.



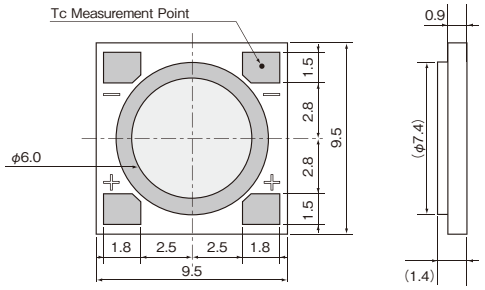
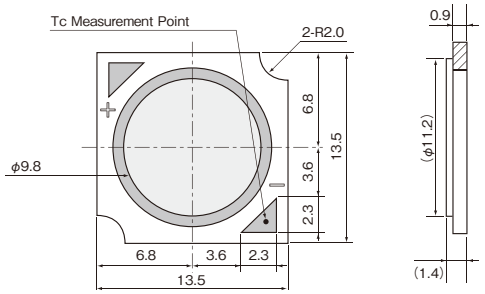
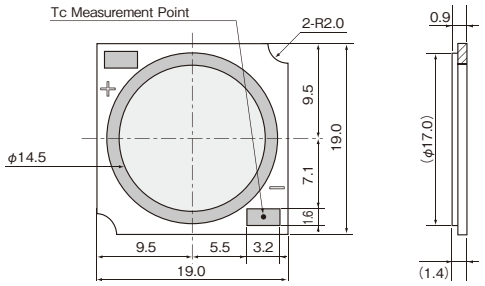
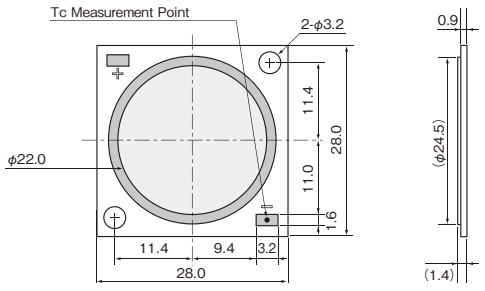
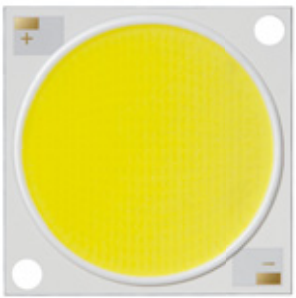
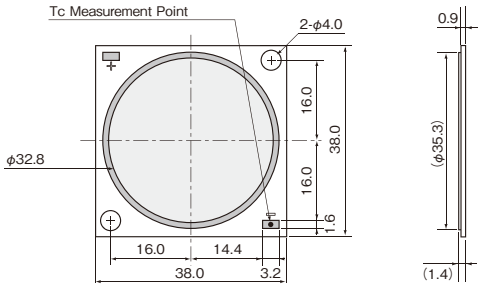
＊1 3-Step MacAdam ellipse are based on ANSI C78.377-2008.
＊2 High efficacy type "excluding CL-L104" indicates CLL012, CLL022, CLL032, CLL042, CLL052.

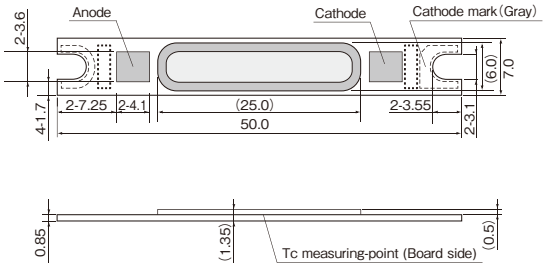
Color Variations

Series	Type	High efficacy type	Ra 80 Min. type (3-step MacAdam Ellipse)					Ra 90 Min. type (3-step MacAdam Ellipse)				
		5,000K	5,000K	4,000K	3,500K	3,000K	2,700K	5,000K	4,000K	3,500K	3,000K	2,700K
CLL012	CLL012-0305A5	○	○	○	○	○	○					
CLL022	CLL022-1202A5	○	○	○	○	○	○		○	○	○	○
	CLL022-1203A5	○	○	○	○	○	○		○	○	○	○
	CLL022-1204A5	○	○	○	○	○	○		○	○	○	○
CLL032	CLL032-1205A5	○	○	○	○	○	○		○	○	○	○
	CLL032-1206A5	○	○	○	○	○	○		○	○	○	○
	CLL032-1208A5	○	○	○	○	○	○		○	○	○	○
	CLL032-1212A5	○	○	○	○	○	○		○	○	○	○
CLL042	CLL042-1218A5	○	○	○	○	○	○		○	○	○	○
	CLL042-1818A5	○	○	○	○	○	○		○	○	○	○
CLL052	CLL052-1825B1	○	○	○	○	○	○					
CL-L104	CL-L104 (3W)	○	○	○	○	○	○	○	○	○	○	○
	CL-L104 (6W)	○	○	○	○	○	○	○	○	○	○	○



Outline Drawings

Series	Appearance (Actual size)	Outline drawing
CLL012	9.5×9.5 mm	 Unit:mm
CLL022	13.5×13.5 mm	 Unit:mm
CLL032	19.0×19.0 mm	 Unit:mm
CLL042	28.0×28.0 mm	 Unit:mm
CLL052	 38.0×38.0 mm	 Unit:mm

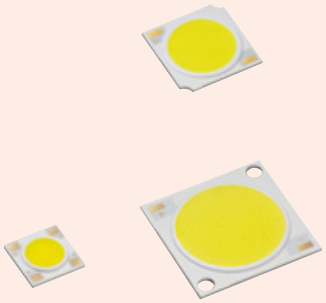
Series	Appearance (Actual size)	Outline drawing
CL-L104	50.0×7.0×1.35 mm	 Unit:mm

Structure of Product Code

CLL012, CLL022, CLL032, CLL042, CLL052

CLL012-0305A5-50KL1A1

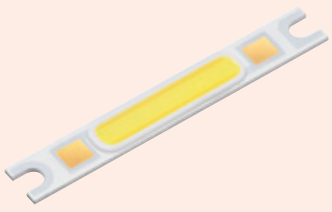
- Part Code
- Dies in series quantity
  - 03:3
- Dies in parallel quantity
  - 05:5
- Correlated color temperature
  - 50:5,000K

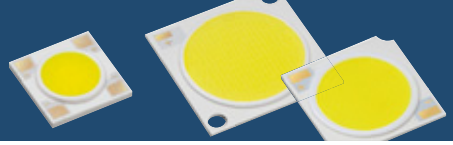


CL-L104

CL-L104-MC3L1-F5

- Series
- Color rendering
  - M:Ra80 Min.
- Wattage class
  - C3:3 watt class
- Correlated color temperature
  - L1:3,000K





Product List

(Tc = 25℃)

Series	Product code	Electro-optical Characteristics								Absolute Maximum Rating	
		CCT	Luminous flux Typ. (lm)	Luminous efficacy Typ. (lm/W)	Ra	Forward current (mA)	Voltage Typ. (V)	Input power Typ. (W)	Thermal resistance Rj-c (℃/W)	PD (W)	Forward current (mA)
CLL012	CLL012-0305A5-503M1A2	5,000K	335	123	80 Min.	300	9.06	2.7	5.5	6.7	600
	CLL012-0305A5-403M1A2	4,000K	330	121							
	CLL012-0305A5-353M1A2	3,500K	325	120							
	CLL012-0305A5-303M1A2	3,000K	315	116							
	CLL012-0305A5-273M1A2	2,700K	295	109							
	CLL012-0305A5-50KL1A1	5,000K	385	142	65 Typ.						

(Tc = 25℃)

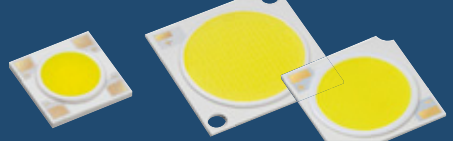
Series	Product code	Electro-optical Characteristics								Absolute Maximum Rating	
		CCT	Luminous flux Typ. (lm)	Luminous efficacy Typ. (lm/W)	Ra	Forward current (mA)	Voltage Typ. (V)	Input power Typ. (W)	Thermal resistance Rj-c (℃/W)	PD (W)	Forward current (mA)
CLL022	CLL022-1202A5-403H3D3	4,000K	460	106	90 Min.						
	CLL022-1202A5-353H3D2	3,500K	450	104							
	CLL022-1202A5-303H3D2	3,000K	425	98							
	CLL022-1202A5-273H3D2	2,700K	395	91							
	CLL022-1202A5-503M1A2	5,000K	570	131	80 Min.	120	36.2	4.3	3.7	10.7	240
	CLL022-1202A5-403M1A2	4,000K	560	129							
	CLL022-1202A5-353M1A2	3,500K	555	128							
	CLL022-1202A5-303M1A2	3,000K	535	123							
	CLL022-1202A5-273M1A2	2,700K	505	116							
	CLL022-1202A5-50KL1A1	5,000K	655	151	65 Typ.						
	CLL022-1203A5-403H3D3	4,000K	680	104	90 Min.						
	CLL022-1203A5-353H3D2	3,500K	665	102							
	CLL022-1203A5-303H3D2	3,000K	620	95							
	CLL022-1203A5-273H3D2	2,700K	585	90							
	CLL022-1203A5-503M1A2	5,000K	830	127	80 Min.	180	36.2	6.5	2.6	16.1	360
	CLL022-1203A5-403M1A2	4,000K	820	126							
	CLL022-1203A5-353M1A2	3,500K	815	125							
	CLL022-1203A5-303M1A2	3,000K	785	120							
	CLL022-1203A5-273M1A2	2,700K	735	113							
	CLL022-1203A5-50KL1A1	5,000K	960	147	65 Typ.						
	CLL022-1204A5-403H3D3	4,000K	900	104	90 Min.						
	CLL022-1204A5-353H3D2	3,500K	870	100							
	CLL022-1204A5-303H3D2	3,000K	820	94							
	CLL022-1204A5-273H3D2	2,700K	770	89							
	CLL022-1204A5-503M1A2	5,000K	1,095	126	80 Min.	240	36.2	8.7	2.1	21.5	480
	CLL022-1204A5-403M1A2	4,000K	1,085	125							
	CLL022-1204A5-353M1A2	3,500K	1,070	123							
	CLL022-1204A5-303M1A2	3,000K	1,030	118							
	CLL022-1204A5-273M1A2	2,700K	975	112							
	CLL022-1204A5-50KL1A1	5,000K	1,270	146	65 Typ.						

Visit our website to find the best product solutions of COB high-wattage LEDs that meet your application.
http://ce.citizen.co.jp/lighting_led/jp/products/COB_series.html

(Tc = 25℃)

Series	Product code	Electro-optical Characteristics								Absolute Maximum Rating	
		CCT	Luminous flux Typ. (lm)	Luminous efficacy Typ. (lm/W)	Ra	Forward current (mA)	Voltage Typ. (V)	Input power Typ. (W)	Thermal resistance Rj-c (℃/W)	PD (W)	Forward current (mA)
CLL032	CLL032-1205A5-403H3D3	4,000K	1,155	106	90 Min.						
	CLL032-1205A5-353H3D2	3,500K	1,120	103							
	CLL032-1205A5-303H3D2	3,000K	1,060	98							
	CLL032-1205A5-273H3D2	2,700K	990	91							
	CLL032-1205A5-503M1A2	5,000K	1,410	130	80 Min.	300	36.2	10.9	1.7	26.8	600
	CLL032-1205A5-403M1A2	4,000K	1,390	128							
	CLL032-1205A5-353M1A2	3,500K	1,380	127							
	CLL032-1205A5-303M1A2	3,000K	1,335	123							
	CLL032-1205A5-273M1A2	2,700K	1,260	116							
	CLL032-1205A5-50KL1A1	5,000K	1,635	150	65 Typ.						
	CLL032-1206A5-403H3D3	4,000K	1,375	106	90 Min.						
	CLL032-1206A5-353H3D2	3,500K	1,330	102							
	CLL032-1206A5-303H3D2	3,000K	1,260	97							
	CLL032-1206A5-273H3D2	2,700K	1,170	90							
	CLL032-1206A5-503M1A2	5,000K	1,670	128	80 Min.	360	36.2	13.0	1.5	32.2	720
	CLL032-1206A5-403M1A2	4,000K	1,655	127							
	CLL032-1206A5-353M1A2	3,500K	1,635	125							
	CLL032-1206A5-303M1A2	3,000K	1,585	121							
	CLL032-1206A5-273M1A2	2,700K	1,490	114							
	CLL032-1206A5-50KL1A1	5,000K	1,940	149	65 Typ.						
	CLL032-1208A5-403H3D3	4,000K	1,820	105	90 Min.						
	CLL032-1208A5-353H3D2	3,500K	1,760	101							
	CLL032-1208A5-303H3D2	3,000K	1,665	96							
	CLL032-1208A5-273H3D2	2,700K	1,550	89							
	CLL032-1208A5-503M1A2	5,000K	2,215	127	80 Min.	480	36.2	17.4	1.2	42.9	960
	CLL032-1208A5-403M1A2	4,000K	2,190	126							
	CLL032-1208A5-353M1A2	3,500K	2,165	124							
	CLL032-1208A5-303M1A2	3,000K	2,095	120							
	CLL032-1208A5-273M1A2	2,700K	1,970	113							
	CLL032-1208A5-50KL1A1	5,000K	2,565	147	65 Typ.						
	CLL032-1212A5-403H3D3	4,000K	2,640	101	90 Min.						
	CLL032-1212A5-353H3D2	3,500K	2,560	98							
	CLL032-1212A5-303H3D2	3,000K	2,410	92							
	CLL032-1212A5-273H3D2	2,700K	2,250	86							
	CLL032-1212A5-503M1A2	5,000K	3,205	123	80 Min.	720	36.2	26.1	0.8	64.4	1,440
	CLL032-1212A5-403M1A2	4,000K	3,170	121							
	CLL032-1212A5-353M1A2	3,500K	3,140	120							
	CLL032-1212A5-303M1A2	3,000K	3,035	116							
	CLL032-1212A5-273M1A2	2,700K	2,860	110							
	CLL032-1212A5-50KL1A1	5,000K	3,715	142	65 Typ.						

*Product names and specifications in this catalog are subject to change without notice for the purpose of improvement, or manufacturing may be discontinued. When electing to use a product, please be sure to request a delivery schedule and latest specifications and check the contents.



(Tc = 25℃)

Series	Product code	Electro-optical Characteristics								Absolute Maximum Rating	
		CCT	Luminous flux Typ. (lm)	Luminous efficacy Typ. (lm/W)	Ra	Forward current (mA)	Voltage Typ. (V)	Input power Typ. (W)	Thermal resistance Rj-c (℃/W)	PD (W)	Forward current (mA)
CLL042	CLL042-1218A5-403H3D3	4,000K	4,135	106	90 Min.						
	CLL042-1218A5-353H3D2	3,500K	4,010	103							
	CLL042-1218A5-303H3D2	3,000K	3,780	97							
	CLL042-1218A5-273H3D2	2,700K	3,525	90							
	CLL042-1218A5-503M1A2	5,000K	5,030	129	80 Min.	1,080	36.2	39.1	0.6	96.6	2,160
	CLL042-1218A5-403M1A2	4,000K	4,980	127							
	CLL042-1218A5-353M1A2	3,500K	4,925	126							
	CLL042-1218A5-303M1A2	3,000K	4,755	121							
	CLL042-1218A5-273M1A2	2,700K	4,480	114							
	CLL042-1218A5-50KL1A1	5,000K	5,830	149	65 Typ.						
	CLL042-1818A5-403H3D3	4,000K	5,895	100	90 Min.						
	CLL042-1818A5-353H3D2	3,500K	5,715	97							
	CLL042-1818A5-303H3D2	3,000K	5,390	92							
	CLL042-1818A5-273H3D2	2,700K	5,020	85							
	CLL042-1818A5-503M1A2	5,000K	7,170	122	80 Min.	1,080	54.4	58.8	0.4	144.9	2,160
	CLL042-1818A5-403M1A2	4,000K	7,090	121							
	CLL042-1818A5-353M1A2	3,500K	7,015	119							
	CLL042-1818A5-303M1A2	3,000K	6,775	115							
	CLL042-1818A5-273M1A2	2,700K	6,390	109							
	CLL042-1818A5-50KL1A1	5,000K	8,310	142	65 Typ.						

(Tc = 25℃)

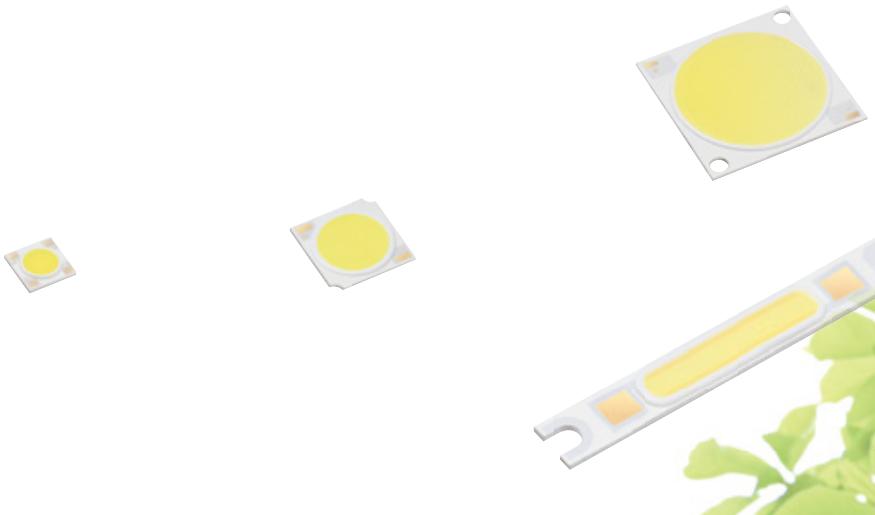
Series	Product code	Electro-optical Characteristics								Absolute Maximum Rating	
		CCT	Luminous flux Typ. (lm)	Luminous efficacy Typ. (lm/W)	Ra	Forward current (mA)	Voltage Typ. (V)	Input power Typ. (W)	Thermal resistance Rj-c (℃/W)	PD (W)	Forward current (mA)
CLL052	CLL052-1825B1-503M1A2	5,000K	10,990	139	80 Min.	1,500	52.7	79.1	0.25	193.2	3,000
	CLL052-1825B1-403M1A2	4,000K	10,850	137							
	CLL052-1825B1-353M1A2	3,500K	10,735	136							
	CLL052-1825B1-303M1A2	3,000K	10,385	131							
	CLL052-1825B1-273M1A2	2,700K	9,785	124							
	CLL052-1825B1-50KL1A1	5,000K	12,750	161	65 Typ.						

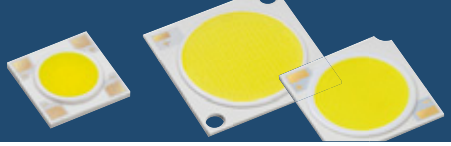
Visit our website to find the best product solutions of COB high-wattage LEDs that meet your application.
http://ce.citizen.co.jp/lighting_led/jp/products/COB_series.html

(Tc = 25℃)

Series	Product code	Electro-optical Characteristics								Absolute Maximum Rating	
		CCT	Luminous flux Typ. (lm)	Luminous efficacy Typ. (lm/W)	Ra	Forward current (mA)	Voltage Typ. (V)	Input power Typ. (W)	Thermal resistance Rj-c (℃/W)	PD (W)	Forward current (mA)
CL-L104 (3W)	CL-L104-HC3N1-F5	5,000K	280	87	90 Min.	350	9.2	3.2	6.4	7.5	720
	CL-L104-HC3W1-F5	4,000K	275	85							
	CL-L104-HC3WW1-F5	3,500K	265	82							
	CL-L104-HC3L1-F5	3,000K	260	81							
	CL-L104-HC3L2-F5	2,700K	250	78							
	CL-L104-MC3N1-F5	5,000K	325	101	80 Min.						
	CL-L104-MC3W1-F5	4,000K	320	99							
	CL-L104-MC3WW1-F5	3,500K	315	98							
	CL-L104-MC3L1-F5	3,000K	305	95							
	CL-L104-MC3L2-F5	2,700K	295	92							
	CL-L104-C3N-F	5,000K	385	120	65 Typ.						
CL-L104 (6W)	CL-L104-HC6N1-F5	5,000K	565	88	90 Min.	700	9.2	6.4	5.0	15.0	1,440
	CL-L104-HC6W1-F5	4,000K	550	85							
	CL-L104-HC6WW1-F5	3,500K	530	82							
	CL-L104-HC6L1-F5	3,000K	520	81							
	CL-L104-HC6L2-F5	2,700K	500	78							
	CL-L104-MC6N1-F5	5,000K	650	101	80 Min.						
	CL-L104-MC6W1-F5	4,000K	640	99							
	CL-L104-MC6WW1-F5	3,500K	630	98							
	CL-L104-MC6L1-F5	3,000K	610	95							
	CL-L104-MC6L2-F5	2,700K	595	92							
	CL-L104-C6N-F	5,000K	760	118	65 Typ.						

＊Product names and specifications in this catalog are subject to change without notice for the purpose of improvement, or manufacturing may be discontinued. When electing to use a product, please be sure to request a delivery schedule and latest specifications and check the contents.





Customer support

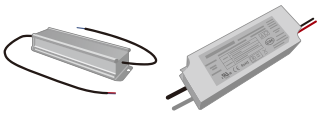
We offer various kinds of customer supports. Our goal is to support your application development efficiently.

Solution Information

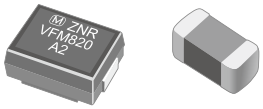
We have introduced a variety of solutions produced by manufacturers in several countries, in order to support business solutions.

■ Optical solutions

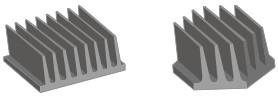
■ Electrical solutions



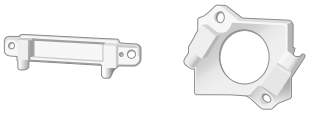
■ Electrical devices



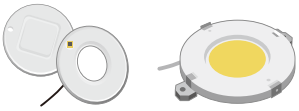
■ Thermal solutions



■ Connectors



■ Sockets



➡http://ce.citizen.co.jp/lighting_led/en/technology/solutions/index.html

Application Notes

We have prepared various technical information to support your development easily. Our application notes solve your design problems with Thermal management, Driving, LM80, Reliability, Handling and Assembly.

■ Thermal management

■ Driving

■ LM80
(Laboratory accreditation)

➡http://ce.citizen.co.jp/lighting_led/en/technology/index.html

CLL620/ CLL130/ CL-L400

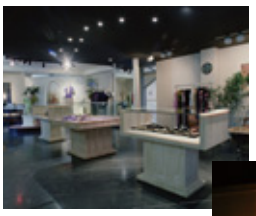
Bulb | **Spot light** | Down light | Tube light | Panel light | Cove light

●CLL620/ CLL130

Compactness is one of the outstanding features of these products. Two types of power are available to support your application utility; 0.1 watt to 0.2 watt (CLL620, CLL130).

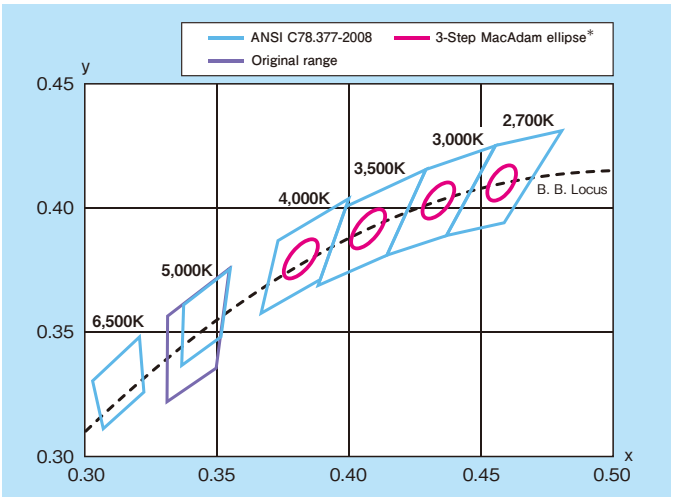
●CL-L400

High efficacy, high reliability, and high radiation of heat – these were the technical problems we especially focused on to develop this product. Silicon reflector material has been adopted in these series instead of the commonly used material "PPA". We also examined the situation carefully and made the best use of advanced technology in this product, for example, by choosing the right resin that does not reduce brightness and has excellent heat and light resisting properties.



Chromaticity Range

Low wattage series complies with 3-step MacAdam Ellipse (2,700~ 4,000K of Ra80 min. type), which is the region where color difference is difficult to distinguish with the human eye. Even if the LED components were used in a large number in an appliance, a comfortable space with close color tone of light can be obtained. The following products are compliant with ANSI C78.377; CLL620, CLL130,CLL400 5,000K and 6,500K of Ra80 min. type.



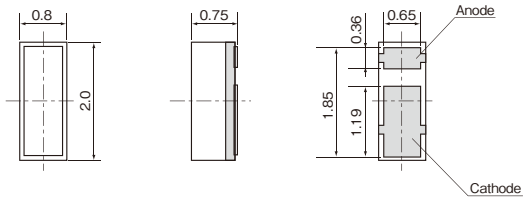
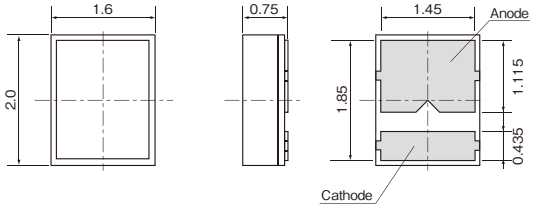
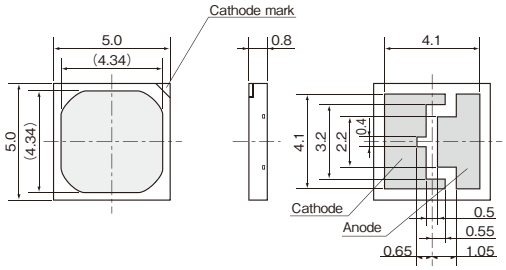
＊3-Step MacAdam ellipse are based on ANSI C78.377-2008.

Color Variations

Series	High efficacy type	Ra 80 Min. type High Color Rendering Type					
	5,000K	6,500K	5,000K	4,000K	3,500K	3,000K	2,700K
CLL620		○	○	○	○	○	○
CLL130-0101		○	○	○	○	○	○
CLL130-0102		○	○	○	○	○	○
CL-L400	○		○	○	○	○	○

Outline Drawings

Pb Free Compliant products　RoHS Compliant products

Series	Appearance (Size)	Outline drawing
CLL620	0.8 (L) × 2.0 (W) × 0.75 (H) mm	 Unit:mm
CLL130	1.6 (L) × 2.0 (W) × 0.75 (H) mm	 Unit:mm
CL-L400	5.0 (L) × 5.0 (W) × 0.8 (H) mm	 Unit:mm

Structure of Product Code

CLL620, CLL130

CLL620-0101B2-50AM1C5

- Series
  CLL : LED for general lighting
- Outline dimension
  620 : 0.8 (L) × 2.0 (W) × 0.75 (H)
- Dies in series quantity
  01 : 1
- Dies in parallel quantity
  01 : 1
- Correlated color temperature
  50 : 5,000K

CL-L400

CL-L400-MC1L1-B

- Series
- Color rendering
  M : Ra80 Min.
- Wattage class
  C1 : 1 watt class
- Correlated color temperature
  L1 : 3,000K

Product List

(Ts = 25℃)

Series	Product code	Electro-optical Characteristics								Absolute Maximum Rating	
		CCT	Luminous flux Typ. (lm)	Luminous efficacy Typ. (lm/W)	Ra	Forward current (mA)	Voltage Typ. (V)	Input power Typ. (W)	Thermal resistance Rj-c (℃/W)	PD (W)	Forward current (mA)
CLL620	CLL620-0101B2-65AM1C5	6,500K	26.5	103.5	80 Min.	80	3.2	0.256	90	0.315	90
	CLL620-0101B2-50AM1C5	5,000K	27.5	107.4							
	CLL620-0101B2-403M1C5	4,000K	27.0	105.5							
	CLL620-0101B2-353M1C5	3,500K	25.9	101.2							
	CLL620-0101B2-303M1C5	3,000K	25.5	99.6							
	CLL620-0101B2-273M1C5	2,700K	24.9	97.3							

(Ts = 25℃)

Series	Product code	Electro-optical Characteristics								Absolute Maximum Rating	
		CCT	Luminous flux Typ. (lm)	Luminous efficacy Typ. (lm/W)	Ra	Forward current (mA)	Voltage Typ. (V)	Input power Typ. (W)	Thermal resistance Rj-c (℃/W)	PD (W)	Forward current (mA)
CLL130	CLL130-0101B2-65AM1C5	6,500K	19.7	130.5	80 Min.	50	3.02	0.151	45	0.289	85
	CLL130-0101B2-50AM1C5	5,000K	20.8	137.7							
	CLL130-0101B2-403M1C5	4,000K	19.3	127.8							
	CLL130-0101B2-353M1C5	3,500K	18.9	125.2							
	CLL130-0101B2-303M1C5	3,000K	18.2	120.5							
	CLL130-0101B2-273M1C5	2,700K	17.6	116.6							
	CLL130-0102B2-65AM1C5	6,500K	20.2	141.8	80 Min.	50	2.85	0.143	30	0.272	85
	CLL130-0102B2-50AM1C5	5,000K	21.4	150.2							
	CLL130-0102B2-403M1C5	4,000K	19.7	138.2							
	CLL130-0102B2-353M1C5	3,500K	19.3	135.4							
	CLL130-0102B2-303M1C5	3,000K	18.5	129.8							
	CLL130-0102B2-273M1C5	2,700K	18.0	126.3							

(Ts = 25℃)

Series	Product code	Electro-optical Characteristics								Absolute Maximum Rating	
		CCT	Luminous flux Typ. (lm)	Luminous efficacy Typ. (lm/W)	Ra	Forward current (mA)	Voltage Typ. (V)	Input power Typ. (W)	Thermal resistance Rj-c (℃/W)	PD (W)	Forward current (mA)
CL-L400	CL-L400-MC1N1-B	5,000K	124	117.6	80 Min.	350	3.01	1.05	9	2.3	600
	CL-L400-MC1W1-B	4,000K	120	113.8							
	CL-L400-MC1WW1-B	3,500K	116	110.0							
	CL-L400-MC1L1-B	3,000K	112	106.2							
	CL-L400-MC1L2-B	2,700K	108	102.4							
	CL-L400-LC1N1-B	5,000K	129	122.4	70 Min.						

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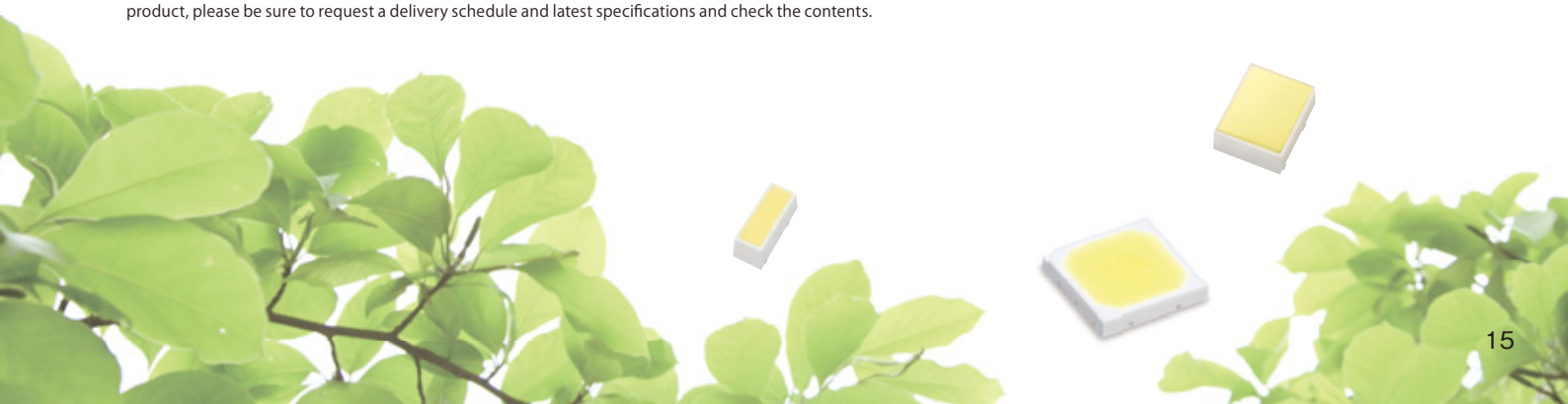

Product selector available on our website

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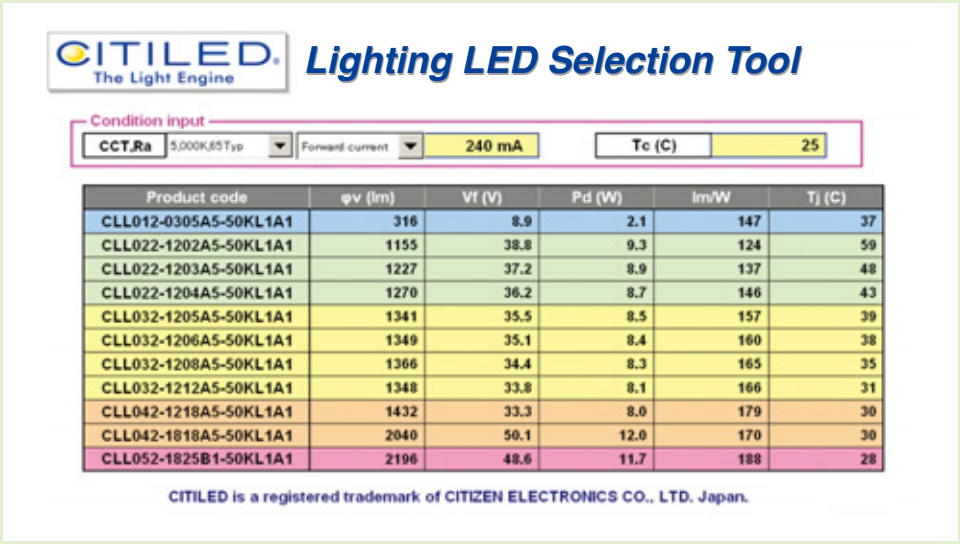
http://ce.citizen.co.jp/lighting_led/en/products/COB_series_ver2.html



Product code	φv (lm)	Vf (V)	Pd (W)	lm/W	Tj (C)
CLL012-0305A5-50KL1A1	316	8.9	2.1	147	37
CLL022-1202A5-50KL1A1	1155	38.8	9.3	124	59
CLL022-1203A5-50KL1A1	1227	37.2	8.9	137	48
CLL022-1204A5-50KL1A1	1270	36.2	8.7	146	43
CLL032-1205A5-50KL1A1	1341	35.5	8.5	157	39
CLL032-1206A5-50KL1A1	1349	35.1	8.4	160	38
CLL032-1208A5-50KL1A1	1366	34.4	8.3	165	35
CLL032-1212A5-50KL1A1	1348	33.8	8.1	166	31
CLL042-1218A5-50KL1A1	1432	33.3	8.0	179	30
CLL042-1818A5-50KL1A1	2040	50.1	12.0	170	30
CLL052-1825B1-50KL1A1	2196	48.6	11.7	188	28

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